M. Sc. (Audiology) Sem – I : WINTER - 2018

SUBJECT: TECHNOLOGY IN AUDIOLOGY

Day: Wednesday
Date: 05/12/2018

W-2018-3699

Time: 10.00 AM TO 01.00 PM
Max. Marks: 80

N.B.:

1) Both questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Attempt any **FOUR** questions out of **SIX**: **(15 Marks each)** **(60)**

a) What is the Nyquist rate? Explain aliasing graphically. What is an anti-aliasing filter and what are its characteristics?

b) What is Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM)? Why and how is TDM used in cochlear implants?

c) Explain the working principles of EEG and MEG. Which neural potentials are measured by these methods? Why?

d) What is a wideband spectrogram? Compare its resolutions and time window length with those of a narrowband spectrogram. Which part of the speech signal is best observed in a wideband spectrogram?

e) Explain how LPC and MFCC are used to model the vocal tract.

f) Explain the working principle of MRI. What are advantages and disadvantages of MRI compared to PET?

Q.2 Attempt any **FOUR** out of **SIX**: **(5 Marks each)** **(20)**

a) What are the advantages of ABR over audiometry?

b) What is the inverse Fourier transform of the Transfer Function of a system called? For a linear system, how is the output spectrum calculated from the input and the transfer function?

c) What are different measures used in intra-operative monitoring?

d) What are different features used for talker recognition?

e) Briefly describe various noise reduction techniques.

f) What are some of the benefits of remote audiological consultation? What are some of the challenges?

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